

# **CACHE CREEK TAMARISK AND ARUNDO ERADICATION**

Final Environmental Assessment CA-340-05-020

And  
Decision Record

Tamarisk and Arundo Eradication along Remote Stretches of Cache Creek  
and North Fork Cache Creek

April 14, 2006

United States  
Department of the Interior

Bureau of Land Management  
Ukiah Field Office  
2550 North State Street  
Ukiah, California

ENVIRONMENTAL ASSESSMENT

**Date:** April 14, 2006

**Project Title:** Cache Creek Tamarisk and Arundo Eradication

**Name and Address of Applicant:** Tuleyome, PO Box 74304, Davis, CA 95617

**Project Location:** T.13N. R.6W. Portions of Sections 8-17, 20, 29, 30;  
T.13N. R.5W. Portions of Sections 18, 19, 26-30, 35, 36;  
T.13N. R.4W. Portions of Sections 31, 32;  
T.12N. R.5W. Portions of Section 1;  
T.12N. R.4W. Portions of Section 6;

Lake and Yolo Counties, California (Lower Lake, Wilson Valley, Glascock Mtn. 7.5' Quadrangles, MDM).

**Land Status Verified:** Yes, all lands included within this project are managed by BLM or California Department of Fish and Game under a Memorandum of Understanding (MOU).

**Affected Surface Area:** Less than 1 acre

**Authorization for the Action:** Federal Land Policy and Management Act, 1976. Public Rangelands Improvement Act, 1978. Carlson-Foley Act, 1968. Federal Noxious Weed Act of 1974, as amended by Sec. 15 - Management of Undesirable Plants on Federal Lands, 1990. Executive Order 13112, 1999. California BLM Pesticide Use Proposal.

**Conformance with Applicable Land Use Plan:** Cache Creek CRMP, 2004

**Relationship to Statutes, Regulations, Policies, Plans or Other Environmental Documents:**

This EA is tiered to the *California Vegetation Management Final Environmental Impact Statement* completed in August, 1988 by the California State Office of the Bureau of Land Management. It utilizes the guidelines and methods approved for vegetation management in this document. This proposal also meets the "Purpose and Need" set forth in the *Vegetative Treatment on BLM Lands in Thirteen States Final EIS* of May, 1991.

The Proposed Action (PA) is part of a watershed-wide effort within the Cache Creek drainage involving several federal, state, and local agencies and organizations to eradicate these two nonnative noxious species.

**Remarks:** This project is limited to the eradication of two noxious plant species on federal and state lands that occur within the project area: tamarisk or saltcedar (*Tamarix parviflora*) and arundo (*Arundo donax*). The project was first proposed to the Ukiah Field Office of BLM by *Tuleyome*, a non-profit public benefit corporation dedicated to protecting the agricultural and wild heritages of the Putah Creek and Cache Creek watersheds and associated regions.

Project work will be restricted to BLM-managed and CDFG-managed portions of Cache Creek and North Fork Cache Creek. The 76,000-acre area of federal and state lands surrounding Cache Creek is known as the Cache Creek Natural Area (BLM – 72,500 acres) and the Cache Creek Wildlife Area (CDFG – 2,500 acres). CDFG also manages an additional 1000 acres of State lands in this area owned by the State Lands Commission.

The North Fork Cache Creek to the confluence with the main stem of Cache Creek and then downstream to the confluence with Bear Creek was inventoried in May, 2005 for the presence of tamarisk and arundo. Forty-six mature plants (25 tamarisk, 21 arundo) were found on public lands along this 19.25-mile stretch of the creeks. Additionally, the 8.5-mile stretch of the South Fork of Cache Creek from Cache Creek Dam downstream to the confluence with the North Fork is not known to include any of these plants based on previous inventories.

It is possible that additional tamarisk and arundo plants may be found within the project area throughout the course of this project; if so, these would also be eradicated according to the PA. During the May 2005 inventory, twelve other plants were also found on intermittent private lands, but are not included as part of this project. They will be included in a separate project, currently being planned by Resource Conservation Districts (RCD's) in Lake and Yolo Counties. The RCD's have the capability of working with landowners to eradicate those plants found on private inholdings within the project area. For the PA of this EA to succeed, it is mandatory that all tamarisk and arundo plants, including those on private lands, are eradicated. This will ensure that there is full control over the infestation of these two invasive plants within this portion of the upper watershed.

Since the project area has a relatively small number of target plants, the primary objective is to completely eradicate them before their numbers increase to the point that removal would involve a much more significant and expensive effort.

For an overview of the project area, please refer to the project area map on the following page.

## Affected Environment

The proposed project is located within two BLM-designated areas, the Rocky Creek/Cache Creek Wilderness Study Area (WSA) and the Cache Creek Area of Critical Environmental Concern (ACEC). Additionally, a proposal to designate 31,000 acres of the BLM lands as a Federal Wilderness Area is currently making its way through Congress and could be finalized sometime in 2006. This project would be compatible with all three of these designations. The project area also includes portions of the State-designated Cache Creek Wildlife Area and Cache Creek State Wild and Scenic River. This project is also compatible with the management constraints of these two designated areas.

For this proposed project, work would be limited to the river corridor. This includes the riparian habitat on both banks of Cache Creek and its North Fork. Several native trees grow in abundance here including willows (*Salix* sp.), alder (*Alnus rhombifolia*), button willow (*Cephalanthus occidentalis*), and Fremont cottonwood (*Populus fremontii*). Other riparian vegetation includes many common species of forbs, grass, rush, and sedge.

A variety of wildlife species are found within the project area. Mammals occurring along the river corridor include tule elk, blacktail deer, and black bear. Riparian-obligate bird species include bald eagle, osprey, great blue heron, great egret, green heron, black-crowned night heron, bittern, spotted sandpiper, least sandpiper, belted kingfisher, mallard, wood duck, widgeon, and common merganser. Fish species documented in Cache Creek include Pacific lamprey, rainbow trout, common carp, California roach, red shiner, Sacramento pikeminnow, speckled dace, hardhead, Sacramento sucker, black bullhead, channel catfish, western mosquitofish, green sunfish, bluegill, smallmouth bass, largemouth bass, and prickly sculpin. Fish documented in the North Fork include brown trout, rainbow trout, smallmouth bass, white crappie, Sacramento pikeminnow, Sacramento sucker, carp, hardhead, California roach, speckled dace, and riffle sculpin.

Four soil types occur within the Lake County portion of the Cache Creek Natural Area including:

(1) Phipps-Balley: Found east of the City of Clearlake. These soils consist of very deep, sloping to very steep, well drained loam and gravelly sand clay loam; on uplifted, dissected hills. Vegetation consists primarily of typical chaparral brush species, oaks and annual grasses. Uses include livestock grazing, wildlife habitat, and watershed.

(2) Millsholm-Skyhigh-Bressa: Found mainly in the Clear Lake Basin and in the southern and eastern parts of the county. These soils include shallow and moderately sloping to steep, well drained loam on hills. Uses include livestock grazing, wildlife habitat, and home site development.

(3) Henneke-Okiota-Montara: Found in the eastern and southern portions of the CCNA. This soil is shallow, moderately sloping to steep, well drained and somewhat excessively drained very gravelly loam and clay loam on hills and mountains. These soils are derived from serpentine and peridotite. Vegetation consists primarily of typical chaparral brush species. Uses include wildlife habitat, watershed, and home site development.

(4) Maymen-Etsel: This soil is shallow, moderately sloping to very steep, somewhat excessively drained loam and gravelly loam. It occurs on hills and mountains. Vegetation consists primarily of brush and scattered hardwood trees. This unit is used mainly for wildlife habitat and watershed. It is also used for recreation and home site development.

The Yolo County portion of the CCNA primarily includes the Davis Creek and Fiske Creek watersheds. Soils here are somewhat excessively drained to well-drained on uplands and high terraces. Soil types here include:

(1) Dibble-Millsholm: This soil is well-drained, steep to very steep loams to silty clay loams; over sandstone.

(2) Rock land: Steep to very steep areas that are 50 to 90 percent rock outcrops.

Rainfall within the project area averages 25 inches annually, mostly during October through April.

The Yolo County Flood Control and Water Conservation District owns and operates both the Cache Creek and Indian Valley Dams. In addition the District controls the majority of surface water rights on Cache Creek and the North Fork in the project area. Water is typically stored in Clear Lake and Indian Valley Reservoir during the winter months, and then released for downstream agricultural irrigation in Yolo County from April through September.

**Need for the Proposed Action:** Arundo and tamarisk, both nonnative noxious plants, occur in limited numbers along upper Cache Creek and the portion of the North Fork Cache Creek included under the PA. Other nearby areas such as Bear Creek and Grizzly Canyon are more seriously infested with these two species. In 2003 the BLM began an intensive program to eradicate the serious tamarisk infestation along Bear Creek (USDI-BLM, 2002) and is currently planning to initiate tamarisk control in Grizzly Canyon. The objective of the PA is to remove these two species from the target areas before they become a serious threat to the aquatic habitat of Cache Creek and the North Fork of Cache Creek. At this time the numbers are easily manageable, as there are only 46 plants documented on federal and state lands scattered along 27.75 miles of Cache Creek and its North Fork within the project area. The difficulty in implementing this project lies in accessing the sites where these plants are found; they occur only in the remote roadless stretch of river canyon accessible only by small inflatable watercraft. Making a pre-emptive strike by eradicating tamarisk and arundo now will result in considerable future savings in time, money, and manpower, as well as a considerably reduced level of herbicide treatment needed to eradicate these two plant species now rather than allowing them to grow unchecked.

The PA is one of several ongoing or identified tamarisk and arundo eradication projects within the Cache Creek watershed. A broad spectrum of federal, state, and local agencies; conservation and environmental organizations; and private landowners are cooperating in this large-scale project to remove these two invasive species from the entire watershed. Eradication of

additional plants located on intervening private lands within the project area will be coordinated with the RCD's in Lake and Yolo Counties and will be implemented in conjunction with the PA.

**Description of the Proposed Action:** Eradicate tamarisk and arundo, both nonnative noxious weeds, along federal and state-managed portions of Cache Creek and North Fork Cache Creek through the use of approved herbicides. The stretches of creeks within the project area include Cache Creek from Cache Creek Dam downstream to Bear Creek and North Fork Cache Creek from the Highway 20 bridge downstream to the confluence with Cache Creek. Most of the target plants are in very remote locations requiring the use of inflatable watercraft for access. No plants will be eradicated on private lands as part of this project; however they will be included in a separate project being coordinated by Lake and Yolo County RCD's. Additional projects in the watershed above the project area will be implemented in the near future to ensure that tamarisk and arundo are completely eradicated from the upper watershed.

Due to the scattered nature of the target plants (only 46 confirmed plants on 27.75 miles of creek – less than 2 plants per mile) a revegetation component to this project will not be necessary. There are many native trees – cottonwood, willow, alder, and buttonwillow – as well as a variety of native riparian shrubs, forbs, and grasses that will easily fill any vegetative void left by the eradication of the target plants. Revegetation with native species would be a waste of time and money because this will occur naturally and swiftly within the riparian zone of Cache Creek.

The goal of the PA is to treat the tamarisk and arundo with the minimum amount of herbicide necessary to permanently kill the target plants. Herbicide treatment was selected as the PA because it is the most feasible option due to the complexity from the project area being located in an isolated river canyon. The isolation of the project location eliminates several alternatives including any use of heavy equipment or livestock grazing, to name a few. See pages 23-26 for a comparison of all alternatives that were considered for this project.

Herbicide use will require a certain amount of flexibility by the applicator dependent upon the site conditions at each target plant location. As a general rule, the less biomass there is to treat, the less herbicide is required. Newly generating tamarisk plants could be hand-pulled if assured that all root material could be removed. If this is not possible, then they would be treated with a foliar application. Smaller tamarisk plants, e.g. those less than four feet with single stems, could be directly sprayed without cutting, while larger plants with individual trunks could be cut and then the stumps treated with herbicide. For extensive thick clumps, such as those located at the mouth of Trout Creek, foliar application without cutting first would be the best approach, similar to the technique that has been used on Bear Creek and lower Cache Creek throughout the Capay Valley.

During the first year of treatment, the mature arundo plants would be cut first, and then when the plants have resprouted sufficiently (approximately 2-4 weeks later) they would be treated one to two times, with 2-4 weeks between each treatment. For any new arundo plants that may be discovered, these would be hand-pulled if assured that all root material could be removed. If this is not possible, these plants would then be treated with a foliar herbicide application without cutting any vegetation first.

During the ensuing years after initial treatment, any resprouts of tamarisk or arundo would be retreated once or twice each year depending upon need, with 2-4 weeks between retreatments. The need to retreat would depend upon the results of the yearly monitoring kayak trip down Cache Creek. Members of Tuleyome will be conducting the annual monitoring surveys in late spring and this will involve 3-4 inflatable kayaks. If retreatment is needed, this will be done at this time and will be timed to avoid conflicts with other recreationists during the high use rafting periods during the weekends.

The Certified Pesticide Applicator responsible for applying the herbicides has estimated in his best judgment that the amount of herbicide to be used to treat the 46 plants for the duration of this project, including up to four years of any necessary follow-up retreatment, would not exceed 2½ gallons total. The amount of Syl-Tac surfactant needed for the life of this project is estimated to be less than two quarts.

To eliminate herbicide drift to non-target plants, treatment will not occur if wind speeds exceed 10 mph. Additionally, the majority of the vegetative material of the target plants will be removed prior to herbicide treatment, enabling precise herbicide placement on cut stumps or on new regrowth under the prescribed environmental parameters.

The two herbicides to be used include Habitat and AquaMaster, both of which have been certified by the U.S. EPA for use in aquatic environments. Both herbicides and the surfactant Syl-Tac have also been approved for use by BLM in California.

The methods proposed for treatment for each of the targeted species include:

A) Tamarisk (*Tamarix parviflora*)

A small chainsaw would be required to cut the multi-branched plants close to the ground. Within 5 minutes of cutting, the stems would be treated with a 9% solution of Habitat, the aquatic formulation of Imazapyr (EPA Reg. No. 241-426) mixed with a 0.25% solution of the surfactant Syl-Tac (CA Reg. No. 2935-50167). Any newly generating tamarisk plants discovered could be hand-pulled, if assured that all root material could be removed. If this is not possible, then these and any small plants less than four feet tall would be directly treated with a foliar application without cutting first. Herbicide would be applied with a one-gallon pressurized tank sprayer. All cut brush from the larger plants would be removed and deposited above the flood zone to prevent any tamarisk regeneration or possible downstream transport by water.

Under the PA the 25 mature tamarisk plants that have been documented on BLM and State lands, and any additional plants found within the project area would be treated according to the guidelines specified above. Follow-up retreatment of resprouts may be necessary for up to four additional years, dependent upon the results of yearly monitoring for successful mortality. The following year, any resprouts would be treated with a mixture of 5% AquaMaster, the aquatic formulation of Glyphosate (EPA Reg. Number 524-343), 3% Habitat, and 3% Syl-Tac using a small one-gallon pressurized tank sprayer. This procedure for treating tamarisk resprouts was

recommended by Joel Trumbo, Certified Pesticide Applicator for the California Department of Fish and Game, and was based on previous successful treatments using this approach.

B) Arundo (*Arundo donax*)

The 21 mature arundo plants that have been documented on BLM and State lands, and any additional plants found within the project area would be treated under the PA. Initially, the mature plants at each location would be manually cut down to near ground level for those plants above the aquatic zone. For any plants located within the aquatic zone, these would only be cut low enough to ensure that there is at least 12 inches of growth remaining above the water. The vegetative material would then be removed to a location above the flood zone from where it could not be transported by water for possible resprouting. Approximately 2-4 weeks later the arundo stumps, which should have some fresh re-sprouts, would be treated with a 5% solution of Aquamaster, 3% solution of Habitat, and 3 % solution of the surfactant Syl-Tac. This method has worked well in previous arundo eradication efforts along Putah Creek (Andrew Fulks, personal communication) because removing the bulk of the vegetative material first, and promoting fresh green shoots helps the subsequent herbicide application to be better absorbed when applied to the new growth, while at the same time forcing the plants to use more root reserves for regrowth reducing the amount of herbicide needed to eventually kill the plants. A small one-gallon pressurized tank sprayer would be used to treat the resprouts with the herbicide solution. If any newly-generating arundo plants are found, these would be hand-pulled if assured that all root material could be removed. If this is not possible, these new plants would be treated with a foliar herbicide application without any cutting.

As with the tamarisk, treatment of the arundo would be repeated as necessary during the ensuing four years following yearly monitoring to ensure that any resprouts or newly-discovered plants are also treated according to the measures listed above.

Additional Info:

Onsite work and follow-up monitoring will be completed by *Tuleyome*. Herbicide application will be completed under the direction of a Certified Pesticide Applicator (CPA) licensed in the state of California which *Tuleyome* is also providing. The herbicide treatments will occur during the time period May 1 through August 31, the optimum time for the most successful kill of the target plants. It will be timed during the day to avoid conflicts with other recreationists during the high use boating times on the creek.

All personnel involved in the herbicide applications will be given safety briefings by the Certified Pesticide Applicator prior to commencing work and all aspects of using the selected pesticides, and worker safety will be under the direct supervision of the CPA. All required safety gear will be utilized which may include eye protection, rubber gloves, and other gear deemed necessary by the CPA. A Pesticide Use Proposal (PUP) will be prepared by the BLM Ukiah Field Office and must be approved by the BLM State Office prior to initiating project work.



All pesticide use will be reported as required to the agricultural commissioners of Lake and Yolo Counties.

All herbicides, pump sprayers, chainsaws, gas/oil mix, chain oil, or any other petroleum-based or chemical product will be transported in leak-proof containers, and those containers will be placed in waterproof transport boxes, thus providing double protection. Any rags, paper towels or other materials used during the herbicide application will also be stored in leak-proof containers prior to leaving each treatment site. All containers will be securely lashed to the transport boat.

#### Assessment of Proposed Herbicides and adjuvants:

### **A. Herbicides.**

#### **1. AquaMaster**

AquaMaster herbicide, which consists of 53.8% glyphosate isopropylamine salt (the active ingredient) and 46.2% distilled water (inert ingredient), is a non-selective aquatic herbicide that controls emerged vegetation in and around bodies of fresh and salt water (Monsanto, 2002). AquaMaster herbicide is effective in lakes, rivers, streams, ponds, seeps, irrigation and drainage ditches, canals, reservoirs, wastewater treatment facilities, wildlife habitat restoration and management areas, and similar sites. When applied according to label directions, AquaMaster herbicide can be used without unreasonable adverse effects to human health or the environment.

AquaMaster has been evaluated in numerous studies with laboratory animals and wildlife species using exposure levels far greater than the levels that might occur from labeled use of the herbicide. The results from extensive, chronic toxicology tests resulted in an EPA cancer classification of glyphosate as a “Category E” or “evidence of non-carcinogenicity for humans,” the most favorable rating granted. Studies have also shown that glyphosate does not cause birth defects or reproductive problems in laboratory animals, and no adverse effects have been observed in mutagenicity and genotoxicity tests.

In 2000, three internationally recognized toxicologists published a safety evaluation and risk assessment of glyphosate. They concluded that glyphosate has low acute toxicity, is not a carcinogen, does not adversely affect reproduction and development, and does not bioaccumulate in mammals. When AquaMaster is used according to label directions, there are no restrictions on the use of water from treated areas for irrigation, recreation, or domestic purposes. Studies have demonstrated that crops irrigated with water from areas treated with AquaMaster will not be adversely affected. Residue levels of glyphosate in water have been found to be significantly below the acceptable level established by the EPA.

Glyphosate, the active ingredient in AquaMaster, has favorable environmental fate characteristics. Over time, glyphosate undergoes microbial degradation in soil, sediment and natural waters, under both aerobic and anaerobic conditions. The major metabolite formed is

aminomethylphosphoric acid, which undergoes further microbial degradation. Glyphosate is ultimately metabolized to carbon dioxide, inorganic phosphate, and other naturally occurring compounds. Glyphosate binds tightly to most types of soil and sediment until it is degraded, and is not absorbed by roots from soil or sediment. This tight binding results in an extremely low potential for glyphosate to move into groundwater. Glyphosate readily dissipates from surface water by two primary mechanisms. It quickly partitions from water into sediment, and then is microbially degraded over time in both water and the sediment. In flowing waters, factors such as tributary dilution and dispersion contribute to the dissipation of glyphosate.

The acute toxicity of AquaMaster to terrestrial and aquatic wildlife has been extensively evaluated, with laboratory and field results indicating low acute toxicity and low risk from direct exposure. Laboratory studies indicate that AquaMaster will not cause adverse effects to avian species, following oral or dietary exposure. AquaMaster has low acute toxicity to aquatic organisms. Surfactants that might be mixed with AquaMaster can have low to moderate acute toxicity to aquatic organisms. However, the toxicity and exposure are sufficiently low that no unreasonable adverse effects to aquatic organisms are expected to occur under normal use conditions.

Glyphosate, the active ingredient in AquaMaster, has extremely low volatility. That means that AquaMaster will not produce vapors that could move through air after application and damage non-target vegetation.

*When used according to label directions, glyphosate:*

- readily degrades over time in soil
- is essentially immobile in soil and is not likely to contaminate ground water;
- does not cause significant adverse health or migrational changes in fish;
- has no significant adverse effects on aquatic or terrestrial invertebrates or waterfowl.

AquaMaster, an aquatic formulation of glyphosate, “already enjoys a regulatory finding by the U.S. EPA [Reg. # 524-343] that it poses no unreasonable risk to human health or the environment in light of the benefits of its use” (IBLA, 2005). Its use was approved by the BLM in the 1988 California Vegetation Management ROD. And then in September 1993 the EPA reregistered glyphosate as an herbicide after concluding that “its use will not pose unreasonable risks or adverse effects to humans or the environment” (USEPA).

## **2. Habitat**

Habitat is a low-volume herbicide that provides effective, long-lasting post-emergent control of undesirable floating and emergent aquatic vegetation, including a broad spectrum of shoreline grass, broadleaf weeds, brush species, and many perennials (BASF Corporation, 2004). Habitat contains the active ingredient Imazapyr, which is part of the imidazolinone chemical family. These products are effective at very low rates, which puts less chemical load on the environment.

The active ingredient in Habitat (isopropylamine salt of imazapyr) does not contain heavy metals, organochlorides, or phosphates.

Habitat works by inhibiting a plant-specific enzyme, causing the plant to stop growing and slowly die as its food and energy reserves are exhausted. This enzyme is not found in animals or humans.

Habitat is labeled for use in and around standing and flowing water, including lakes, rivers, streams, ponds, seeps, drainage ditches, canals, reservoirs, terrestrial, estuarine, marine and aquatic sites and seasonal wet areas. Within 10 hours of application, habitat slows and stops growth of susceptible species. Generally, one to two weeks after application, plant yellowing can be seen. Between two and four weeks, death of growing plants occurs.

Habitat is specifically formulated for use for aquatic applications and which provide the most effective control of saltcedar. It is effective at very low rates, which puts less chemical load on the environment, and works by inhibiting three key amino acids essential to plant growth. The herbicide translocates to the roots and shoots and inhibits a specific enzyme that causes the saltcedar to stop growing and slowly die as its nutrient reserves are exhausted. The active ingredient in habitat is a nonvolatile, water-soluble herbicide that dissipates rapidly in aquatic systems and will not bioaccumulate in aquatic organisms.

The label for Habitat specifies that water may not be used for irrigation purposes for 120 days after application. This applies if the herbicide is being sprayed directly into the water and if the water is being used within 1000 feet of the treatment area. Neither of these two conditions applies. Herbicide will not be sprayed directly into the water, but on cut stumps or the foliage of tamarisk and arundo. Additionally, the nearest water diversion for irrigation from the nearest proposed treatment area is approximately seven miles downstream at the Rumsey Canal.

Habitat, the aquatic formulation of Imazapyr has been registered by the U.S. EPA and also enjoys a regulatory finding that it poses no unreasonable risk to human health or the environment in light of the benefits of its use. This registration by the EPA applies to all of the ingredients in Habitat, including the active ingredient (isopropylamine salt of imazapyr) as well as all inert ingredients. Use of Habitat has been allowed by the BLM with the approval of the 1988 California Vegetation Management ROD. The use of this herbicide in the PA will strictly follow all label instructions for its use.

There have been no studies showing that there are synergistic effects of combining AquaMaster, Habitat, and Syl-Tac in the same tank mixture. Results so far have shown that any toxicological impacts are *additive*, i.e. each chemical component works individually rather than with a combined or *synergistic* effect (Johnson, personal communication).

## **B. Adjuvants**

### **Syl-Tac (surfactant)**

Syl-Tac is a blend of a highly effective organo-silicone surfactant and modified vegetable oil concentrate. It is designed for use with pesticides requiring an organo-silicone surfactant or a modified vegetable oil concentrate. Spray solutions mixed with Syl-Tac can provide excellent spreading, wetting, and penetration on the leaf surface depending upon the concentration used. This blend of surfactant and modified vegetable oil has demonstrated herbicide enhancement on both broadleaf and grass weed species. (Wilbur-Ellis Company)

Syl-Tac has been registered for use in California by the California Department of Pesticide Regulation (CA Reg. No. 2935-50167) and due to this registration, has been approved for use on BLM lands.

## **Environmental Impacts**

### **Proposed Action:**

Eradicate tamarisk and arundo, both nonnative noxious weeds, along federal and state-managed portions of Cache Creek and North Fork Cache Creek through the use of approved herbicides. Hand-pulling of newly-growing plants will also be used as a control method, if appropriate.

Critical Element	Affected? yes      no		Critical Element	Affected? yes      no	
1. Air Quality (CAA, 1955) Frank Arriaza		x	2. T&E Species (ESA, 1973) Gregg Mangan or Pardee Bardwell	x	
3. Water Quality (Surface and Ground; SDWA amend 1996, CWA 1987, EO's 12580, 12088, 12372) Frank Arriaza		x	4. ACEC's (FLPMA, 1976) Gregg Mangan		x
5. Wetlands/Riparian Zone (EO-11990) Pardee Bardwell	x		6. Hazardous & Solid Wastes (RCRA, 1976; CERCLA, 1980) Doug Prado	x	
7. Floodplains (EO-11988) Pardee Bardwell		x	8. Farm Lands (SMARA, 1977)		x
9. Environmental Justice (EO-12898) Brooke Brown		x	10. Wilderness (FLPMA, 1976; WA, 1964) Jonna Hildenbrand		x
11. Native American Religious Concerns (AIRFA, 1978) Brooke Brown		x	12. Wild and Scenic Rivers (W&SRA, 1968) Jonna Hildenbrand		x
13. Cultural Resources (NHPA, 1966) Brooke Brown		x	14. Invasive, Non-Native Species (Lacey Act, Federal Noxious Weed Act of 1974) Pardee Bardwell	x	
15. Migratory Birds (EO 13186, 2001) Gregg Mangan or Pardee Bardwell		x			

*In the following paragraphs describe the impacts (direct, indirect, and cumulative) to the above critical elements and all other resources that might be affected by the proposed action or alternatives. If a critical element is not affected, write a short explanation below, otherwise explain how the critical element is affected. For all impacts, describe a mitigation measure to reduce or eliminate that impact.*

See NEPA Handbook, App5, for more info and references to BLM manual sections about these Critical Elements.

#### **A. Impacts to Critical Elements:**

1. Air Quality: Not affected
2. T&E Species: Affected. This would be an insignificant temporary disturbance to bald eagles during project implementation.

3. Water Quality: Not affected. Both herbicides proposed in this project have been registered for use in aquatic environments by the U.S. EPA; however they will not be applied directly into the water, but rather on the target plants in the adjacent riparian area. The same holds true for the surfactant Syl-Tac.

The label for Habitat states that “water treated with Habitat may not be used for irrigation purposes for 120 days after application . . .” This applies to directly spraying in the water, not spot treatment of cut stumps within or adjacent to the water as described within the PA. Additionally this restriction only applies if irrigation water is diverted within 1000 feet of the treated sites. The closest irrigation diversion would be approximately seven miles downstream from the nearest location where herbicide treatment would occur.

When applied according to label directions, AquaMaster and Habitat herbicides can be used without unreasonable adverse effects to human health or the environment, according to the EPA. This determination also applies to the surfactant Syl-Tac, as registered by the California Department of Pesticide Regulation.

4. ACEC's: Not affected. There would be a positive effect with the removal of these two nonnative noxious plants from the aquatic habitat in the project area.

5. Wetlands/Riparian Zone: Affected. Minimal temporary effects could be expected such as localized impacts on streamside vegetation from the trampling action of workers during eradication efforts.

6. Hazardous & Solid Wastes: Affected. However extreme measures are being taken to protect against any accidental spillage of chemical or petroleum products during transport down the river. See Proposed Action.

7. Floodplains: Not affected. There would be a beneficial effect as the two target species are removed from the floodplain.

8. Farm Lands: Not affected.

9. Environmental Justice: Not affected.

10. Wilderness: Not affected. . However it is possible that by the time of project implementation, the Cache Creek Proposed Wilderness may be a designated Federal Wilderness Area. The wilderness legislation for Cache Creek was specifically written to allow for eradication of noxious vegetation, including use of herbicides. If this designation does occur, the PA will have a positive effect on wilderness values with the elimination of these invasive species.

11. Native American Religious Concerns: Not affected.

12. Wild and Scenic Rivers: Not affected. Cache Creek was recently designated a State Wild and Scenic River. This designation specifically allows for invasive plant eradication, including the use of herbicides. The PA will have a positive effect on wild and scenic rivers. If at some point in the future Cache Creek is also designated a Federal Wild and Scenic River, this will also be an improvement in wild and scenic river values by the removal of these two noxious species. The Draft Ukiah Resource Management Plan (RMP), September, 2005, also identifies this segment of Cache Creek as eligible for the Federal Wild and Scenic designation. The PA is consistent with the intent of the WSR Act.

13. Cultural Resources: Not affected. All eradication sites are below the flood zone, where there are no known cultural sites remaining, due to periodic flooding.

14. Invasive, Non-Native Species: Affected. The PA will permanently remove two invasive, nonnative species. This is the intent of the PA.

15. Migratory birds: Not affected.

B. Impacts to other resources from the Proposed Action:

1. Soils: Not affected. When glyphosate comes into contact with soil, it binds to the soil particles. Glyphosate has a half life of 45 days and degrades naturally in the environment while bound to soil particles. The affinity between this product and soil particles remains until the product is degraded, which is primarily a biological degradation process is carried out under both aerobic and anaerobic conditions by soil microflora.

Studies (BASF) have shown that imazapyr has no adverse effect on numbers of soil organisms, growth rates of microbial populations, soil enzymes, nitrogen cycling, sulfur oxidation, mineralization of organic substrates or normal soil respiration. If imazapyr is applied directly to the soil, uptake by roots of non-target plants can result in mortality. The PA does not include direct spraying on the soil, but is targeted to cut stumps or foliage.

2. Recreation: Not affected.

3. Visual Resources: Not affected.

### **Alternative 1 - No-Action.**

This alternative involves leaving the situation as it currently is. No action means that no treatment of tamarisk or arundo would occur on Cache Creek or North Fork Cache Creek. These two species would continue to spread throughout the watershed and could become significantly denser where it is currently found, as well as reinfesting previously treated areas downstream. Tamarisk and arundo would continue to displace native riparian species that are used by native fauna for cover and forage.

### **Environmental Impacts**

#### **No Action Alternative:**

Critical Element	Affected? yes no		Critical Element	Affected? yes no	
1. Air Quality (CAA, 1955) Frank Arriaza		x	2. T&E Species (ESA, 1973) Gregg Mangan or Pardee Bardwell		x
3. Water Quality (Surface and Ground; SDWA amend 1996, CWA 1987, EO's 12580, 12088, 12372) Frank Arriaza		x	4. ACEC's (FLPMA, 1976) Gregg Mangan	x	
5. Wetlands/Riparian Zone (EO-11990) Pardee Bardwell	x		6. Hazardous & Solid Wastes (RCRA, 1976; CERCLA, 1980) Doug Prado		x
7. Floodplains (EO-11988) Pardee Bardwell	x		8. Farm Lands (SMARA, 1977)		x
9. Environmental Justice (EO-12898) Brooke Brown		x	10. Wilderness (FLPMA, 1976; WA, 1964) Jonna Hildenbrand	x	
11. Native American Religious Concerns (AIRFA, 1978) Brooke Brown		x	12. Wild and Scenic Rivers (W&SRA, 1968) Jonna Hildenbrand		x
13. Cultural Resources (NHPA, 1966) Brooke Brown		x	14. Invasive, Non-Native Species (Lacey Act, Federal Noxious Weed Act of 1974, EO 13112, 1999) Pardee Bardwell	x	
15. Migratory Birds (EO 13186, 2001) Gregg Mangan or Pardee Bardwell	x				

#### **A. Impacts to Critical Elements:**

1. Air Quality: Not affected
2. T&E Species: Not affected
3. Water Quality: Not affected.
4. ACEC's: Affected. Tamarisk and arundo would increase and continue to spread throughout the Cache Creek ACEC, reducing populations of other native plant species and the



overall scenic quality of the ACEC.

5. Wetlands/Riparian Zone: Affected. Tamarisk and arundo will increase and will continue to reduce populations of other native plant species within the riparian zone.
6. Hazardous & Solid Wastes: Not affected.
7. Floodplains: Affected. Tamarisk and arundo would increase and continue to reduce populations of other native plant species within the floodplains.
8. Farm Lands: Not affected.
9. Environmental Justice: Not affected.
10. Wilderness: Affected. Tamarisk and arundo would increase and continue to spread throughout the proposed Cache Creek Wilderness Area, reducing populations of other native plant species and the overall scenic quality of the proposed wilderness area.
11. Native American Religious Concerns: Not affected.
12. Wild and Scenic Rivers: Affected. Tamarisk and arundo would increase and continue to spread throughout the State-designated Cache Creek Wild and Scenic River, reducing populations of other native plant species and the overall scenic quality of this area.
13. Cultural Resources: Not affected.
14. Invasive, Non-Native Species: Affected. The No Action Alternative will allow these two invasive nonnative species to continue to spread without restriction, reinfesting previously treated areas.
15. Migratory birds: Affected. Over time there would be additional loss of migratory bird habitat as tamarisk and arundo continue to replace the beneficial riparian vegetation.

B. Impacts to other resources from the No Action Alternative:

1. Visual Resources: Affected. Over time the tamarisk and arundo would likely increase in numbers under the No Action Alternative, lowering the visual quality of the river corridor.
2. Recreation: Not affected.

## **Alternative 2 - Grubbing and Hand Pulling.**

The 25 tamarisk and 21 arundo mature plants would be cut with chainsaws to remove the bulk of the vegetation, and then the remaining root balls would be grubbed with hand tools, without any follow up herbicide application. All vegetative material from the tamarisk and arundo would be removed and deposited above the flood zone to prevent any regeneration or possible downstream transport by water. Any additional plants discovered that are newly-germinating or seedlings in early growth stages would be pulled by hand. Yearly monitoring and any additional grubbing would then continue indefinitely until all resprouting at the plant locations has ceased, and then yearly monitoring would continue. If no signs of any resprouts are seen for a period of five years following the last grubbing, the project would be considered completed.

### **Environmental Impacts:**

#### **Grubbing and Hand Pulling Alternative:**

Critical Element	Affected? yes      no		Critical Element	Affected? yes      no	
Air Quality (CAA, 1955) Frank Arriaza		x	T&E Species (ESA, 1973) Gregg Mangan/Pardee Bardwell	x	
Water Quality (Surface and Ground; SDWA amend 1996, CWA 1987, EO's 12580, 12088, 12372) Frank Arriaza	x		ACEC's (FLPMA, 1976) Gregg Mangan		x
Wetlands/Riparian Zone (EO-11990) Frank Arriaza	x		Wastes, Hazardous/Solid (RCRA, 1976; CERCLA, 1980) Doug Prado		x
Floodplains (EO-11988) Frank Arriaza	x		Farm Lands (SMARA, 1977) Frank Arriaza		x
Environmental Justice (EO-12898) Brook Brown		x	Wilderness (FLPMA, 1976; WA, 1964) Jonna Hildenbrand	x	
Native American Concerns (AIRFA, 1978) Brook Brown		x	Wild and Scenic Rivers (W&SRA, 1968) Jonna Hildenbrand	x	
Cultural Resources (NHPA, 1966) Brook Brown		x	Invasive, Non-Native Species (Lacey Act, Federal Noxious Weed Act of 1974) Pardee Bardwell	x	
Migratory Birds (EO-13186, 2001) Gregg Mangan or Pardee Bardwell	x				

#### **A. Impacts to Critical Elements:**

1. Air Quality: Not affected.
2. T&E Species: Affected. The bald eagle would temporarily avoid the area during plant removal activities, but return once workers leave the area. This would be considered insignificant. The one arundo plant located near the active bald eagle nest site will not be treated

until after July 1, to avoid conflict with pre-fledgling eagles.

3. Water Quality: Affected. There is potential for slight localized siltation from nearby ground disturbance caused from grubbing and hand-pulling activities. However, this would be temporary and is considered insignificant.
4. ACEC's: Not affected.
5. Wetlands/Riparian Zone: Affected. Grubbing with tools would create temporary holes and soil disturbance by digging up the root balls and tracing the rhizomes of the larger plants. This would be considered a temporary minor impact.
6. Hazardous & Solid Wastes: Not affected.
7. Floodplains: Affected. Grubbing with tools would create temporary holes and soil disturbance by digging up the root balls and tracing the rhizomes of the larger plants. This would be considered a temporary minor impact.
8. Farm Lands: Not affected.
9. Environmental Justice: Not affected.
10. Wilderness: Affected. This would be considered a temporary minor visual impact to wilderness values from holes and soils disturbance from digging up root balls. As a result of the PA, however, wilderness values would be improved by the removal of the noxious plants.
11. Native American Religious Concerns: Not affected.
12. Wild and Scenic Rivers: Affected. This would be considered a temporary minor visual impact within the river corridor from holes and soils disturbance from digging up root balls. As a result of the PA, however, wild and scenic river values would be improved by the removal of the noxious plants.
13. Cultural Resources: Not affected. The project area is within the flood zone.
14. Invasive, Non-Native Species: Affected. This method would reduce the amount of arundo and tamarisk. Bad for invasives, good for natives!
15. Migratory Birds: Affected. Migratory birds would temporarily avoid the area where workers are grubbing and pulling the tamarisk and arundo. This would be considered insignificant.

B. Impacts to other resources from the Grubbing and Hand Pulling Alternative:

1. Soils: Affected. Grubbing the root balls of the larger tamarisk and arundo plants would create large holes, possibly resulting in significant temporary soil disturbance.
2. Wildlife: Affected. Most wildlife species would temporarily avoid the area where workers are grubbing and pulling weeds. This would be considered insignificant.
3. Visual Resources: Affected. Grubbing with tools would create large holes and soil disturbance within a designated State Wild and Scenic River and Wilderness Study Area by digging up the root balls and tracing the rhizomes.
4. Recreation: Not affected.

### **Alternative 3 – Tarping.**

The 25 tamarisk and 21 arundo mature plants would be cut close to the ground with chainsaws to remove the bulk of the vegetation, and then securely covered with plastic tarping material.

There would be no grubbing with tools to remove the root balls. Any newly growing tamarisk or arundo would be hand-pulled. All vegetative material from the tamarisk and arundo would be removed and deposited above the flood zone to prevent any regeneration or possible downstream transport by water.

### **Environmental Impacts:**

#### **Tarping Alternative:**

Critical Element	Affected? yes      no		Critical Element	Affected? yes      no	
Air Quality (CAA, 1955) Frank Arriaza		x	T&E Species (ESA, 1973) Gregg Mangan/Pardee Bardwell	x	
Water Quality (Surface and Ground; SDWA amend 1996, CWA 1987, EO's 12580, 12088, 12372) Frank Arriaza		x	ACEC's (FLPMA, 1976) Gregg Mangan	x	
Wetlands/Riparian Zone (EO-11990) Frank Arriaza		x	Wastes, Hazardous/Solid (RCRA, 1976; CERCLA, 1980) Doug Prado		x
Floodplains (EO-11988) Frank Arriaza		x	Farm Lands (SMARA, 1977) Frank Arriaza		x
Environmental Justice (EO-12898) Brook Brown		x	Wilderness (FLPMA, 1976; WA, 1964) Jonna Hildenbrand	x	
Native American Concerns (AIRFA, 1978) Brook Brown		x	Wild and Scenic Rivers (W&SRA, 1968) Jonna Hildenbrand	x	
Cultural Resources (NHPA, 1966) Brook Brown		x	Invasive, Non-Native Species (Lacey Act, Federal Noxious Weed Act of 1974) Pardee Bardwell	x	
Migratory Birds (EO-13186, 2001) Gregg Mangan or Pardee Bardwell	x				

#### **A. Impacts to Critical Elements:**

1. Air Quality: Not affected.
2. T&E Species: Affected. The bald eagle would avoid the area during plant removal activities and tarping activities, but return once workers leave the area. This would be considered insignificant.
3. Water Quality: Not affected.

4. ACEC's: Affected. There would be a temporary visual impact to the visual quality of the Cache Creek ACEC from the tarps that are anchored onto the cut plants.
5. Wetlands/Riparian Zone: Not affected.
6. Hazardous & Solid Wastes: Not affected.
7. Floodplains: Not affected.
8. Farm Lands: Not affected.
9. Environmental Justice: Not affected.
10. Wilderness: Affected. There would be a temporary visual impact to wilderness values from the tarps that are anchored onto the cut plants.
11. Native American Religious Concerns: Not affected.
12. Wild and Scenic Rivers: Affected. There would be a temporary visual impact to wild and scenic river values from the tarps that are anchored onto the cut plants.
13. Cultural Resources: Not affected. The project area is within the flood zone.
14. Invasive, Non-Native Species: Affected. This method would reduce the amount of arundo and tamarisk. Bad for invasives, good for natives!
15. Migratory Birds: Affected. Migratory birds would temporarily avoid the area where workers are cutting and tarping the tamarisk and arundo. This would be considered insignificant.

B. Impacts to other resources from the Tarping Alternative:

1. Wildlife: Affected. Most wildlife species would temporarily avoid the area where workers are cutting and tarping the tamarisk and arundo. This would be considered insignificant.
2. Visual Resources: Affected. Covering the cut plants with plastic tarps could result in a visually-intrusive appearance while the tarps are in place. This in turn affects wilderness and wild and scenic river values. Tarps could potentially be scattered by high winter water flows, creating the appearance of trash. This would be considered a temporary impact until all tarps are retrieved and removed from the project area.
3. Recreation: Not affected.

## An Evaluation of the Proposed Action and Alternatives Considered

### 1. Proposed Action: Herbicide Application

Herbicide application was chosen as the PA because after a review of all alternatives, the BLM determined that it is the best treatment method for permanent eradication of the two target species, especially considering the complex nature of the project area and the difficulties in getting to the treatment locations. This issue alone eliminated many of the alternatives considered.

The two herbicides proposed for use in this project, Habitat and AquaMaster are becoming the herbicides of choice for land managers needing to eradicate tamarisk and arundo within the aquatic zone. The “cut and paint” or “hack and squirt” methods using Garlon that were used extensively several years ago have been supplanted with newer formulations of herbicides and techniques that, in addition to being approved for use in aquatic environments, are more effective at killing the target plants with just a single treatment. Previously the treatment with Garlon usually required several follow-up re-treatments, sometimes three or four times.

### 2. Alternative 1: No Action

The No Action alternative involves leaving the situation as is. There would be no measures taken to eradicate tamarisk or arundo within the remote stretch of the upper Cache Creek watershed.

This alternative was not selected because it does nothing to prevent the spread of these two noxious plants in an area that is not yet heavily infested, but could be in the near future in the absence of eradication efforts. The BLM is under a mandate to prevent the spread of noxious weeds and would be remiss in taking no action to eradicate these two plants from the project area.

### 3. Alternative 2: Grubbing and Hand Pulling

This alternative involves the use of chainsaws to remove as much of the above-ground vegetative growth as possible, then hand tools to dig out and remove the root balls of the target plants. Any regenerating or newly-growing tamarisk or arundo plants would be grubbed or hand pulled as appropriate.

This alternative was not selected because of the extreme difficulty involved in removing the entire large root masses by hand, especially from the large tamarisk plants. It would be easier if heavy equipment could be used, but the project area is located in a remote roadless river canyon that has been proposed for wilderness designation, therefore use of heavy equipment cannot be considered due to the excessive amount of disturbance that would result.

In this alternative, every root would have to be completely removed in its entirety in order to completely kill each plant. This would result in an inordinate amount of soil disturbance as

every piece of root is traced, dug up, and removed. All it takes is one missed section of root to enable the plants to regenerate. Repeated grubblings would likely be necessary, increasing the cumulative impact of this alternative. This alternative would be prohibitive in time and manpower and has no guarantee of being successful.

#### 4. Alternative 3: Tarping

This alternative involves removing all top growth with chainsaws and hand tools. Vegetative material would then be moved to a location above the flood zone so that it could not be washed downstream. The ground surface where the plants had been cut would then be covered with tarping material. In tarping experiments, an opaque tarp or pond liner is placed over the cut stems to prevent photosynthesis and secured in place with large stakes or rocks (Sotoyome Resource Conservation District). Tarps typically remain in place from spring through summer, and then removed before the rainy season begins.

This method has had some success with arundo, such as along the Russian River in Sonoma County. In most cases it has been used in combination with a herbicide such as glyphosate. However, tarping has not been proven to be an effective method to use for tamarisk control.

Water flows along Cache Creek from mid-spring through summer are high, due to releases from Clear Lake and Indian Valley Reservoir for downstream agricultural irrigation. After being cut down to ground level, some of the target arundo plants could be underwater at this time or are located on steep banks, and are therefore unsuitable for tarping. Tamarisk resprouts are too stout to be held back by tarps and would easily puncture them (Cache Creek Conservancy, 2005). Standard procedure in tarping experiments has been to check each tarp approximately every two weeks to make sure that they remain secured.

As a result, tarping will not be used because this technique would only provide limited success to arundo, but has no proven record of being successful for tamarisk control.



## **Other Alternatives Considered, but dropped**

### **1. Grazing.**

Cattle and probably goats will eat tamarisk. However, goats might be able to control dense stands of tamarisk where little native vegetation is present, particularly if the stands are cut or burned first, with goats eating the regrowth (Carpenter 2003).

Grazing was dropped as an alternative primarily because of the specific characteristics of the project area being located in an isolated roadless river canyon where the only feasible access is by inflatable watercraft. High water flows for downstream agricultural irrigation during the spring and summer months make navigating the river canyon by watercraft the only feasible means of moving through the canyon.

The majority of the project area is within a designated BLM Wilderness Study Area (WSA) and a proposed Wilderness Area (currently working its way through Congress) where grazing is not allowed by BLM policy in either area. Even if BLM policy allowed the use of livestock here, the logistics of moving a herd to the individual plant sites would be futile.

### **2. Burning.**

Burning opens dense tamarisk stands and greatly reduces tamarisk biomass. However, tamarisk will sprout heavily following burning and a secondary measure (most often herbicide application) is required to kill the resprouts (San Francisco Estuary Institute).

Again due to the isolated nature of the project area, as well as the fire danger existing at the optimum time for burning, this alternative was dropped.

### **3. Cutting with heavy equipment.**

Various methods of cutting including scraping, root plowing, mowing, and disking will remove large amounts of biomass, but could result in significant surface disturbance. However just as in burning, extensive sprouting will occur from any root segments left under the soil surface. Unless there is a follow-up measure to treat resprouts, cutting alone will fail.

Many forms of cutting require some sort of equipment for which there is no access to the project area. Heavy equipment use in this area is not allowed by BLM WSA policy.

### **4. Biocontrols**

There are no known biocontrols for arundo; however there have been some very promising results on tamarisk in Nevada with the Chinese leaf-eating beetle. In 2001 an experimental population of the Chinese beetle was released into a cage on Bear Creek near the project area to see if this biocontrol agent could be used for tamarisk control. This population failed. Two years later a population of the same species of beetle from the Mediterranean area was released

in the same area. This population also failed, unable to survive in the harsh environment here. It was thought by researchers that the species of tamarisk in the Cache Creek Natural Area, *Tamarix parviflora*, was not as desirable to the beetles as *T. ramosissima*, the species in Nevada. The study area on Bear Creek also had many insect predators that predated on the leaf beetles.

With the failure of these two populations of the same species of biocontrol agents from different parts of the world, the USDA Agricultural Research Service decided that no further attempts will be made at Cache Creek for biocontrol of tamarisk using the leaf-eating beetle.

#### 5. Use of non-toxic organic herbicides

There are no organic herbicides that have a proven record for eradicating tamarisk and arundo. Products such as BurnOut are advertised for annual and perennial weeds, mostly forbs and grasses. There is no indication on the product label or track record that it can successfully be used for treatment of large shrubby invasives such as tamarisk or arundo.

This project requires that the two target plants be eradicated completely from the project area. It would be futile to attempt to use a new product that has no proven record and is not even recommended to be used for the intended purpose of this project.

#### 6. Use of organic mulch matting

Use of products such as EcoCover to prevent regrowth of tamarisk and arundo after cutting has not been proven to be effective. This product is primarily meant for treatment of smaller annual weeds. The manufacturers of EcoCover recommend that all perennial weeds be killed before the mulch matting is laid. The use of glyphosate is recommended to accomplish this (EcoCover).

**Mitigation Measures:** All necessary mitigations to keep impacts to a minimum and safety to a maximum have been incorporated into the PA. To prevent drift, herbicide treatment would not be allowed if wind speed exceeds 10 mph. The herbicides and surfactant to be used have been registered by EPA and approved for use by BLM. The PA is tiered to the BLM's 1988 *California Vegetation Management Final Environmental Impact Statement* and includes stipulations for protecting worker safety during the herbicide application process.

The following table depicts recent vegetation management projects implemented on *nearby* BLM lands. These projects involve an integrated approach to pest management including herbicide application, prescribed burning, mowing, seeding with native species, and biocontrol.

Table 1. Vegetation Management Projects Implemented Nearby on the Payne Ranch

<b>Target Weed Species</b>	<b>Location/Control Method</b>	<b>Acres</b>	<b>EA #</b>
Medusahead, Yellow Starthistle, Barb Goatgrass	Bear Creek Prescribe Burn	140	CA-340-03-011
Medusahead, Yellow Starthistle,	Payne Ranch Prescribe Burn	250	CA-340-05-003
Medusahead, Yellow Starthistle, Barb Goatgrass	Mowing and Native Seeding- Cache Creek Natural Area	150	CA-034-02-017
Yellow Starthistle	Bear Cr. Yellow Starthistle Spraying	75	CA-034-03-016
Barb Goatgrass	Payne Ranch (Bear Creek) Pesticide Application (Roundup/Rodeo) & Mowing	100	CA-340-01-010
Tamarisk	Eula, Craig and Thompson Canyon Pesticide Application (Garlon)	20	CA-340-99-021
Tamarisk	Bear Creek Pesticide Application (Stalker)	180	CA-340-02-023
Tamarisk	Bear Creek Biological Control Study	10	CA-340-01-021
Medusahead, Yellow starthistle, Barbed Goatgrass	Payne Ranch Seeding with follow-up herbicide application	75	CA-340-05-015

**Cumulative Impacts:** The PA would occur over a 5-year period which includes initial project implementation, then monitoring and any necessary retreatment during the ensuing 4 years.

There have been no previous herbicide treatments within the project area. The greatest impact resulting from this project is the elimination of two serious invasive plants from the remote “wilderness run” of the Cache Creek Natural Area. Impacts from the herbicide use, according to the specific use prescribed for this project, will be negligible.

**Residual Impacts:** It is expected that as tamarisk and arundo are removed, native plants will re-establish in the area, benefiting a variety of wildlife species including Neotropical birds.

**Monitoring Plan:** The project area will be monitored annually by *Tuleyome* for a 4-year period following initial eradication efforts. A written report will be sent to Gregg Mangan, Cache Creek Natural Area Manager detailing the results of this monitoring. Monitoring will focus on the effectiveness of the initial herbicide treatment, as well as noting the presence of any previously undetected or newly growing tamarisk or arundo and the extent of new native plant growth. These results will determine the need for any further herbicide treatment. If more herbicide treatment is needed, a Certified Pesticide Applicator will again oversee all herbicide use.

**People/Agencies Contacted:**

Andrew Fulks, *Tuleyome*  
Bob Schneider, *Tuleyome*  
Greg Dils, West Lake RCD  
Scott Koller, CDFG  
Joel Trumbo, CDFG  
Jan Lowrey, Cache Creek Conservancy  
Paul Robins, Yolo County RCD  
Craig Thomsen, UC Davis Department of Agronomy and Range Science  
Scott Johnson, Wilbur-Ellis  
Martin Lemon, Monsanto Corporation

**This Environmental Assessment was sent to the following parties for their review and comment:**

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## References

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USEPA. 1993. Reregistration Eligibility Decision Fact Sheet for Glyphosate. 7 pages. On the web at: <http://www.epa.gov/REDs/factsheets/0178fact.pdf>

Wilbur-Ellis Company. *Syl-Tac Modified Vegetable Oil Concentrate*. Product label. 1 page

### Writer's and Reviewers' Signature Page

*(Each of you should sign-off on this page only when you are satisfied that this NEPA.doc or CX is complete, correct, and accurate.)*

**Title of Project:** Cache Creek Tamarisk and Arundo Eradication

**Preparing Office:** Ukiah Field Office

**Project Leader:** Gregg Mangan      **Title:** Cache Creek Natural Area Manager

**List of Reviewers:**

Position	Signature	Position	Signature
Biology, Forest Plan, and Rangeland Management	Pardee Bardwell	Soil, Water, and Air Specialist	Frank Arriaza
Realty Specialist	Alice Vigil	Operations	Steve Myers
Archaeologist	Brook Browne	Engineering and Rights-of-Way	Bill Dabbs
Fire/Fuels	Jim Dawson	Geologist	(vacant)
Cache Creek Natural Area Manager (sign for CCNA projects only)	Gregg Mangan	Hazardous Materials	(vacant)
Recreation Planner and Visual Resources Mgmt.	Jonna Hildenbrand	Law Enforcement Supervisor	Walt Gabler
OHV Recreation Planner	Jamie Neilans	Energy (sign for energy projects only)	Rich Estabrook
Pesticides (sign for pesticide projects only)	Tobey Ringuette		

/s/ Gregg J. Mangan      4/18/06

Project Leader      Date

## **FONSI/DECISION RECORD**

**Project:** Cache Creek Tamarisk and Arundo Eradication

The PA involves eradicating tamarisk and arundo plants found along a remote stretch of Cache Creek and North Fork of Cache Creek by the use of herbicides. A total of 46 known plants will be treated, as well as any others found, according to the prescriptions included within the PA. Hand-pulling of newly-growing plants may also be used as a control measure, if appropriate. The PA only includes plants found on BLM or State-managed lands. Other plants found on adjacent private lands will be the subject of subsequent eradication projects implemented by the Resource Conservation Districts.

The herbicides and surfactant proposed for use have been registered with E.P.A. and approved by BLM for use on public lands.

### **1. FONSI**

I have reviewed Environmental Assessment CA-340-05-020 and have determined that the proposed action results in a Finding of No Significant Impact on the human environment. I find that proper consideration has been given to all resource values and that this assessment is technically adequate. Therefore, an environmental impact statement is not required to further analyze the environmental effects of the proposed action.

Reviewed by:

/s/ Jonna Hildenbrand  
Environmental Coordinator

4/19/06  
Date

/s/ Rich Burns  
Ukiah Field Office Manager

4/18/06  
Date



## 2. DECISION RECORD

I have reviewed the proposed action addressed in Environmental Assessment CA-340-05-020 and approve it as the decision of the Bureau of Land Management. The decision is to eradicate tamarisk and arundo plants found along a remote stretch of Cache Creek and North Fork of Cache Creek by the use of herbicides. Hand-pulling of newly-growing plants may also be used as a control measure, if assured that all root material can be successfully removed.

This decision is consistent with present land use decisions and local government policy. The decision to use herbicide treatment to eradicate tamarisk and arundo is not an irretrievable commitment of resources. Site specific impacts have been addressed and impacts are minor. None of the impacts of this decision are considered to be significant or highly controversial enough to require an environmental impact statement.

A yearly monitoring plan will be prepared by the project proponent, *Tuleyome*, and reviewed by Gregg Mangan, Cache Creek Natural Area Manager.

Approved by:

/s/ Rich Burns  
Ukiah Field Office Manager

4/18/06  
Date